Chapter 9 Communication Nodes and Node Buildings

Communication node buildings are to be provided at 15-mile interval locations on the FMS network. A node building is an environmentally controlled structure at a field site where information is accumulated and transmitted along fiber-optic cables to the TOC. Communication nodes that collect all device information from a geographic area may be located in the field or at the TOC.

9.1 Node Buildings

New node buildings are generally modular pre-cast buildings. The building size is based upon the number of racks and communications equipment that are planned to eventually reside in the building. Node buildings contain several racks of electronic equipment for node to field and node to TOC communications. This equipment supports multiplexing video and data signals as well as switching equipment to provide redundant paths of communications for the transmission of field device data and images to the TOC. Occasionally, the node building will contain Coarse Wavelength Division Multiplexing (CWDM) and Internet Protocol (IP) equipment, Uninterruptible Power Supply (UPS) equipment and power disconnects, as well as heating, ventilation, and air conditioning (HVAC) controls, and, recently, telephone gear. The node foundation site material should be a well-compacted AB or similar approved material. An all-weather path to an adjacent paved surface for the maintenance technician's access should always be provided. Select the node building site for access, security, and always well clear of any roadway. Each potential site should be evaluated to ensure it is clear of any future expansion (auxiliary lanes, connector-distributor roadways, frontage roads, etc.).

New node buildings will also include the design of the Access Control System and Building Automation System. The FMS designer should coordinate the Access Control System design and the Building Automation System design with the ADOT TTG PM. Other considerations for node buildings include:

- Floodplain elevation;
- Use of asphalt concrete pavement millings for sub-base;
- Portland cement concrete base, reinforced, five inches thick, with edge footings on all four sides;
- Sidewalk on three sides;
- External power disconnect;
- Conduits through side wall, not concrete base;
- Exterior texture and color — coordinate with architect;
- False floor designed for 250 pounds per square foot total load;
- UPS supplied below false floor; and
- Consistent with other ADOT facilities.

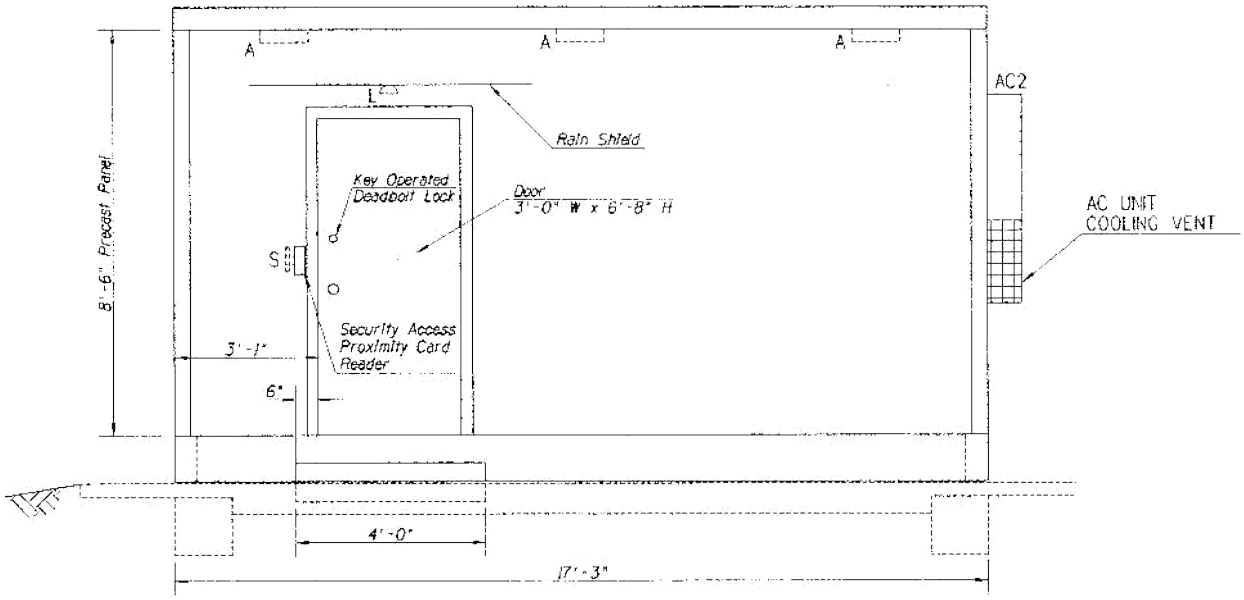

Figure 9.1 – Typical Node Building Elevation